CORRESPONDENCE/MEMORANDUM

State of Wisconsin

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TO: Daniel H. Schramm

FROM: Sensen Lin

SUBJECT: Response to Comments on the Preliminary Determination and the Draft Permit for USG Interiors, LLC, Permit 265006830-P10.

The public comment period for operation permit 265006830-P10 ended on April 20, 2014. Comments on the preliminary determination and draft permit were received from Michael Spreitzer, the Plant Manager at USG Interiors, LLC, on April 14, 2014. We sent a request for clarification on some of the comments and received a reply from USG Interiors, LLC on May 1, 2014.

Comments on the preliminary determination and draft permit were received from Genevieve Domico, Chief of the Air Permits Section, U.S. EPA, Region V on April 21, 2014.

A summary of the comments and our response are set out below:

I. Response to Comments from USG Interiors, LLC

A. Draft Permit

1. Comment: Section B.3 Sulfur Dioxide on page 10 of 45 of the draft permit: The company believes that "the emission limit of 5.5 pounds of sulfur dioxide per million Btu in section NR 417.07, Wisconsin Administrative Code, is a state only restriction, and if so, should be indicated as such." The company believes that EPA approved sulfur dioxide emission limits for coal-fired units but not coke-fired units such as the mineral wool cupola at the USG Interiors plant. In support the company excerpted some language from a May 21, 1993, Federal Register:

> (2) Emission Limits of Existing (Before February 1, 1985) Sources (NR 417.07(2))
>
> Content: Establishes the following emission limits for sources constructed before February 1, 1985:
>
> (a) Coal-fired units at facilities with combined coal-firing capacity greater than or equal to 250 MMBTU/HR-3.2 lbs/MMBTU
> (b) Coal-fired units at facilities with

combined coal-firing capacity less than
250 MMBTU/HR-5.5 lbs/MMBTU

Action: USEPA is approving
subsections (a), (b), (c), and (d)
above, subject to source-
specific demonstrations of
attainment (see Section II (C)
and (D) of this notice).

1. Response: We do not agree with this comment. First we want to provide a short chronology of the statewide sulfur dioxide rules.

a. February 1, 1985 – The Statewide Sulfur Dioxide Limitations become effective as NR 154.12(11), Wis. Adm. Code.
b. June 5, 1985 – The Statewide Sulfur Dioxide Limitations are submitted to the U.S. EPA as a revision to the state implementation plan (SIP).
c. October 1, 1986 – The air rules in NR 154, Wis. Adm. Code, were renumbered into the NR 400-499 series and become effective. The Statewide Sulfur Dioxide Limitations are renumbered to NR 417.07 but are otherwise unchanged.
d. January 2, 1992 – The U.S. EPA proposes to approve the Statewide Sulfur Dioxide Limitations submitted on June 5, 1985, as part of the SIP. (In the Federal Register the EPA references the rules as NR 417.)
e. May 21, 1993 – The U.S. EPA approves the Statewide Sulfur Dioxide Limitations as part of the SIP.

The comment letter we received included an attached copy of the May 21, 1993, Federal Register as supporting documentation for the belief that the sulfur dioxide limit is a state only restriction. Below is a hyperlink connection to the U.S. EPA Region V website that provides documentation on approved revisions to Wisconsin's SIP.

http://yosemite.epa.gov/r5/r5ard.nsf/97758e33633852b8625750057311a/27f8ad68c5814f548625756f0047897c!OpenDocument

There are two PDF documents at this site. One is a PDF of the May 21, 1993, Federal Register. The other PDF document is a copy of NR 417, Wis. Adm. Code, which the EPA is approving as part of the SIP by the action on May 21, 1993.

The company's comment is not correct because the EPA approved the complete text of the Statewide Sulfur Dioxide Limitations in NR 417.07, Wis. Adm. Code, as part of the SIP. The excerpt from the Federal Register that the company included in their comment is quoted correctly. But in the paragraph directly preceding this excerpt, the Federal Register states:

> "Below is a summary of the submitted State SO_2 plan. Readers should refer to the January 2, 1992, Federal Register for a more detailed discussion of the background information and technical support data."

In the excerpt the company included in their comment the EPA was providing a summary of the rule, not

the rule verbatim. In the Federal Register when EPA says they are "approving subsections (a), (b), (c) and (d) above" they are approving the language in NR 417.07(2)(a), (b), (c), and (d), Wis. Adm. Code, as submitted by the state June 5, 1985. They are not the approving the wording in the summary in the Federal Register. That summary is incomplete and worded differently than the state's SO_2 rules. The full text of the state's SO_2 rule is:

> NR 417.07(2)(b) – Any steam generating unit or other fuel burning equipment firing solid fossil fuel, alone or in combination with fuel burning equipment firing other fuels, at a facility which has a total heat input capacity on solid fuel of less than 250 million Btu per hour may not emit from any stack more than 5.5 pounds of sulfur dioxide per million Btu heat input.

The words "or other fuel burning equipment firing solid fossil fuel" in this rule make it applicable to the mineral wool cupola at this facility because the fuel is coke. The EPA approval of this rule as part of the SIP makes it federally enforceable. We will not make any changes in the draft permit in response to this comment.

2. Comment: Section B.5.c.(4) on page 13 of 45: In the third line of the permit condition, the term "thermal couple" should be corrected to be "thermocouple".

2. Response: "Thermal couple" in Condition I.B.5.c.(4) will be changed to "thermocouple".

3. Comment: Section B.6.a.(1) on page 14 of 45 can be eliminated. (This condition limits NR 445 compound emissions – other than HF and As – to less than the applicable threshold in column (e) of NR 445. The other 2 conditions in this section, B.6.a.(2) and (3), limit the ambient air quality impact of HF emissions and require the use of a baghouse to control As emissions.) The company states that condition I.ZZZ.6.a and b. on page 42 addresses the applicable requirements for NR 445 compounds other than HF and As, and I.B.6.a.(1) can be eliminated and (2) and (3) can be renumbered.

3. Response: Conditions I.B.6.a.(1) and I.ZZZ.6.a.(1) are related but address different applicable requirements.

Condition I.B.6.a.(1) generically limits the emissions of hazardous air pollutants in NR 445 (other than HF and As) to less than the lb/hr or lb/yr threshold values in column (e) of Table A.

Condition I.ZZZ.6.a.(1) limits emissions of hazardous air pollutants to a level that does not exceed the ambient air standard in column (g) of Table A.

Condition I.B.6.a.(1) is the compliance method under s. NR 445.08(2)(a), Wis. Adm. Code, while Condition I.ZZZ.6.a.(1) is the emission requirement under s. NR 445.07(1)(a), Wis. Adm. Code. To clarify and streamline the permit, all of the requirements in Section I.B.6. and the footnotes at the bottom of the page will be moved to Section I.ZZZ.6.

Section I.B.6.a.(1) will require that "The permittee shall comply with requirements in I.ZZZ.6.a. [s. 285.65(7), Wis. Stats., ss. NR 445.07 and NR 445.08, Wis. Adm. Code]

4. Comment: Section B. 6. c. (1) and (2) on page 14 of 45: These provisions are state only enforceable and should be indicated as such. Additionally, because the provisions are state only enforceable, test methods or protocols should not be subject to USEPA approval or review.

4. Response: The comment is correct. This is a state only condition and an asterisk (*) will be added to Conditions I.B.6.c.(1) and (2) to denote they are not federally enforceable.

Condition I.B.6.c.(1) requires the permittee to use a test method and testing protocol approved by either the US EPA or the Department whenever any HAP pollutant concentration or emission testing is required. This condition was not meant to require US EPA's approval for testing but rather providing more options on allowable test methods and testing protocol, i.e. the permittee could use a test method that is approved by the US EPA or the Department.

As indicated in the letter dated May 1, 2014, the permittee agreed that Condition I.B.6.c.(1) should remain unchanged with the understanding that the permittee does not need to seek US EPA approval for the use of specific test methods or protocols and the permittee can use test methods or protocols that have been approved by the EPA at the time of the testing.

5. Comment: Section H. 1. c. (3) on page 28 of 45: Elsewhere when referring to filter devices, a monthly time interval is stated for the frequency of inspections. In this section, reference is made to the Malfunction Prevention and Abatement Plan.

5. Response: This is an error. Condition I.H.1.c.(3) will be revised as follows: "(3)….The time interval between inspections shall be monthly ~~as specified in the Malfunction prevention and Abatement Plan~~."

6. Comment: Section J.1.a.(1)(a) on page 31 of 45: Delete the word "either: in the phrase: "Emissions of nitrogen oxides (NO_x) and hydrocarbon (HC) combined may not exceed either 10 g/hp-hr". The provision reads correctly without the work "either".

6. Response: This was an error. The word "either" will be removed.

7. Comment: Section J. 1. a. (1)(b) on page 31 of 45: The citation should be 40 CFR §60.4233(d) rather than (e) based on the size of the engine.

7. Response: This is an error. The reference for Condition I.J.1.a.(1)(b) will be corrected to 40 CFR §60.4233(d).

8. Comment: Section J.1.b.(1) on page 31 of 45: Correct the spelling of the term "stationary".

8. Response: This was an error and has been corrected.

9. Comment: Section J.1.c.(1) on page 31 of 45: Correct the spelling of "nonresettable"; the "b" and "I" are transposed.

9. Response: This was an error and has been corrected.

10. Comment: Section J.1.b.(3) on page 32 of 45: Correct the grammar by changing "do" to "does" in the phrase "If the permittee do not operate and maintain the certified stationary SI…"

Delete the following sentence as it is not applicable based on the size of the engine: "In addition, an owner or operator of a stationary SI internal combustion engine greater than or equal to 100 hp and less than or equal to 500 hp must conduct an initial performance test within 1 year of engine startup to

demonstrate compliance."

10. Response: The grammar was in error and has been corrected. This sentence will be deleted from Condition I.J.1.b.(4) because Process P11 is a 97.5 hp engine and the sentence is only applicable to engines between 100 hp and 500 hp.

11. Comment: Section ZZZ. 6 on page 42 of 45: Add an asterisk (*) following "(State HAPs)" and to provisions in a. (2) and c. (1) to indicate these provisions are state only enforceable. In addition, because these provisions are state only enforceable, the reference to EPA approval in c. (1) should be deleted.

11. Response: An asterisk (*) will be added to Conditions I.ZZZ.6.a.(2) and I.ZZZ.6.c.(1) to denote they are not federally enforceable.

Condition I.B.6.c.(1) requires the permittee to use a test method and testing protocol approved by either the US EPA or the Department whenever any HAP pollutant concentration or emission testing is required. This condition was not require US EPA's approval for testing but rather providing more options on allowable test methods and testing protocol, i.e. the permittee could use a test method that is approved by the US EPA or the Department.

As indicated in the letter dated May 1, 2014, the permittee agreed that Condition I.B.6.c.(1) should remain unchanged with the understanding that the permittee does not need to seek US EPA approval for the use of specific test methods or protocols and the permittee could use test methods or protocols that have been approved by the EPA at the time of the testing.

12. Comment: Part II, C.2.o and M.2.: Indicate that this provision is state only enforceable as it refers to provisions in Chapter NR 445, Wis. Adm. Code.

12. Response: An asterisk (*) will be added to Conditions II.C.2.o and II.M.2..

B. Preliminary Determination

1. Comment: In the table on page 7 titled Stack Parameter Summary For Stacks, data presented for the flow rates from S138B1A is not correctly represented. The correct flow rate for stack S138B1A is 3,231 acfm, the same as the other composite stacks exhausting this process as shown on page 22 of the Preliminary Determination. The stated flow rates (60,000 acfm norma and 80,000 acfm maximum) are representative of the total of all stacks that comprise S13.

For modeling purposes, 10 composite stacks (prefixed as S13 in the table) were created to represent all 27 exhaust points for this process. Therefore, the data presented in the Preliminary Determination for each stack should not be construed to be representative of the flow rate from any actual emission point.

In the same table (**Stack Parameter Summary For Stacks Included in Permit 265006830-P10)** for S30 (emergency water pump) which appears on page 8, it should be noted that the actual emissionpoint is within the building.

1. Response: A note will be added to the addendum to the preliminary determination stating that the flow rate for Stack S138B1A should be corrected to 3,231 acfm and that Stack S30 exhausts inside the building.

2. Comment: The list of insignificant emission units is not complete. The paint manufacturing operation should be added to this list, as noted on page 5 of the Preliminary Determination. In addition, the fugitive material handling and storage operations, and on-site vehicle traffic should also be included as insignificant sources. In the renewal application, we also identified waste screening operations, in addition to the fugitive outdoor storage piles.

2. Response: The paint manufacturing operation and waste screening operations were left off the list by error. They will be noted as additional insignificant emission units in the addendum to the preliminary determination. The material handling and storage, outdoor storage piles, and on-site vehicle traffic are identified as Processes FS001 and FS003. According to emission calculations provided by the permittee, the maximum theoretical emissions of particulate matter from each of Processes FS001 and FS003 are more than 1 ton per year. Therefore, these processes are not classified as insignificant emission units.

3. Comment: Stacks S11 and S12, Process P30- Mineral Wool Cupola (pages 10-11): **This was a lengthy comment and we have broken the comment and response into subparts.**

a. Comment: The calculated VOC emission rate of 3.25 pounds per hour is representative of the emission rate prior to control by a thermal oxidizer. Actual VOC emissions are significantly lower as a result of the thermal oxidizer, and we calculate a potential emission rate of only 0.72 tons per year.

In a follow-up letter dated May 1, 2014, the company explained that the 0.72 tons per year was derived from an uncontrolled emission factor of 2.5 pounds of VOC per ton of coke and a control efficiency of 95% applied to the thermal oxidizer. This would result in a controlled VOC emission rate of 0.16 pounds per hour or 0.72 tons per year (assuming operation 24 hours per day, 365 days per year).

The company supports the 95% control efficiency assumption by reference to a stack test that demonstrating 99% oxidation of carbon monoxide and some emission test data submitted with the 2007 operation permit application that "suggests the actual VOC emissions may be less than 0.01 pounds per hour".

a. Response: Although we believe the thermal oxidizer does oxidize some VOC emissions from the cupola, we do not have any supporting documentation for the assumption of 95% control efficiency.

In the LACT analysis submittal dated October 11, 2007, the permittee indicated that, based on the department's guidance on the LACT requirements under s. NR 424.03(2), Wis. Adm. Code, 85% control of VOC emissions was considered technically infeasible for the cupola and the permittee proposed the LACT requirements to be continuing to operate with the use of the existing thermal oxidizer. Accordingly, a conservative control efficiency of 80% could be used to calculate the potential emissions of VOCs from the cupola. The PTEs of VOCs from the cupola should be changed to 0.65 lb/hr [3.25 lb/hr x (1-80%) = 0.65 lb/hr], and 2.85 ton/yr.

b. Comment: For carbonyl sulfide emissions, 50% of the detection limit would yield only 0.07 lb/hr; 0.14 lb/hr is the rate at the detection limit.

b. Response: The comment is correct and the preliminary determination agrees with this comment. On Page 10 of the preliminary determination, it states "The PTEs of carbonyl sulfide are assumed to be 50% of the detection limit, which is 0.14 lb/hr." The word "which" in this

sentence refers to the detection limit, not 50% of the detection limit. On page 24, the table of HAP emissions for the mineral wool cupola lists the potential to emit for carbonyl sulfide is 0.07 pounds per hour.

c. Comment: We disagree with the assessment of sulfur dioxide emission rates as presented on page 11 of the Preliminary Determination. USG Interiors has previously characterized sulfur dioxide emissions from the cupola to be approximately 18.69 lb/ton of melt which yields a maximum hourly emission rate of 215 lb SO_2/hour as noted in the previous Preliminary Determination issued by the Department in 2008. We continue to believe this is indicative of current conditions.

In AP-42, EPA provides an emission factor of 3lb H_2S per ton of cupola throughput, with no mention of COS emissions. The H_2S emissions are attributed to a 1980 EPA document which in turn references two emission tests done in the 1970s in a Canadian study and a single emission test at a US plant. The tests in the Canadian study were both 1.0 lb/ton or less. The US test (Spring Hope Rockwool, Inc. in North Carolina) was reported to be more than 7 lb H_2S/ton. According to EPA, averaging the 3 tests results in an emission factor of 3 lb/ton. Curiously, the Spring Hope Rockwool, Inc. plant is referenced in AP-42 and it is somewhat unique in that it processed aluminum smelting slag where others processed steel slag. In the Preliminary determination, the Department indicates that the factor of 3 lb H_2S originated from a "compliance" test. This is not accurate, rather it was obtained during an EPA test program, gathering information to develop the NESHAP for the mineral wool industry in early 1994.

Whether the measured emissions from these tests was actually H_2S or compounds reported as H_2S is uncertain. In the emission tests at USG's sister facility that participated in the USEPA NESHAP study, H_2S emissions were not detected, though the researchers did note that there may have been interferences. An earlier test at another USG facility resulted in a measured uncontrolled H_2S emission rate of only 0.05 lb/ton.

Tests conducted by the industry for the Risk and Technology review under EPA's NESHAP program showed uncontrolled COS emission rates of approximately 3 pounds per ton of melt, which we believe may have been previously reported as H_2S in earlier testing programs. As noted on page 10, USG's emission tests have shown COS post-control emissions were below the detection limit referenced above. The Department has already accounted for uncontrolled COS MTE in the HAP table on page 28 of the PD. We do not agree that those emissions should also be included in the MTE estimate for SO_2.

Emission tests for sulfur dioxide emissions at other USG plants suggest that the proposed revision shown here significantly over-states the SO_2 emission rate.

It is our opinion that the Maximum Theoretical Emission rate of 215 lb SO_2/hour is accurate.

c. Response: In our preliminary determination, we look at two main criteriain determining whether or not a permit can be issued:

1. The source will meet all applicable emission limitations and other requirements promulgated under the state statutes.

2. The source will not violate or exacerbate a violation of an air quality standard or ambient air increment.

When doing this type of review, it is rare that actual emission values measured by stack test on the source are available. So, as a practical matter, we use the best information available, which are usually the emission factors published by the U.S. EPA. We know these emission factors will be of varying quality so when we do the calculations we often do the calculations conservatively high. If the source can meet the two criteria of meeting emission limits and not cause or exacerbate an ambient air quality standard with a conservative high emission estimate, the permit is approvable.

As discussed on Page 11 of the preliminary determination, when the original operation permit review (265006830-P01) was done, we estimated the maximum theoretical emission rate of 215 lb/hr for SO_2 by taking the emission factors for SO_2, SO_3, and H_2S from the U.S. EPA emission factors. We assumed that the afterburner oxidized the SO_3 and H_2S to SO_2 and came up with an emission rate from burning coke of 215 lb/hr.

We were provided information in the renewal permit application for 265006830-P10 that indicated there were also carbonyl sulfide emissions from burning coke in the cupola. The formula for carbonyl sulfide is OCS (a double bonded oxygen, carbon, and sulfur molecule).

We conservatively calculated that any carbonyl sulfide emissions would be oxidized in the afterburner to SO_2. On page 11 we calculated the amount of SO_2 that would be produced from oxidation of the carbonyl sulfide. That value was 36.8 lb/hr. We added this value to the previous emission estimate of 215 lb/hr (calculated in 265006830-P01) because the previous estimate did not include any contribution from carbonyl sulfide.

Adding in the carbonyl sulfide contribution gave us an estimated emission rate of 251.8 lb/hr.

The estimated emission rate of 251.8 lb/hr was used as a conservative emission estimate in the dispersion modeling analysis that evaluated whether the source would violate or exacerbate a violation of an air quality standard. The air quality review on pages 20-21show the sulfur dioxide air quality standards will be met even with the 251.8 lb/hr emission estimate.

This is a worst case estimate which accounts for all sulfur sources and assumes they are oxidized by the control device to SO2. A more accurate SO_2 emission rate for the cupola can only be identified by measuring the emissions from the cupola with a stack test of the unit while operating at or near capacity.

4. Comment: On page 11, the statement that "siloxane volatilizes and creates particulate matter emissions" is not entirely accurate, as only a fraction of the siloxane used in this process volatilizes resulting in particulate matter emissions.

4. Response: The data provided in the email dated Jan. 17, 2014, from John Bolden showed that particulate emission rates are much less than amount of siloxane used during the tests. Accordingly, this statement will be revised in an addendum to the preliminary determination to "A fraction of siloxane volatilizes and creates particulate matter emissions."

5. Comment: On page 14, with respect to the New Source Performance Standard (40 CFR part 60, subpart JJJJ), we note that 60.4245(e) is not applicable because the engine is less than 100 hp.

5. Response: This is a typographical error. It will be corrected to "§60.4245(d)" in an addendum to the preliminary determination.

6. Comment: On page 18, a statement is made that the cupola baghouse controls emission of hydrogen sulfide. We believe that the Department intended to state that the baghouse actually controls emissions of hydrogen chloride in addition to the other air pollutants identified in the Department's statement.

6. Response: This is an error. It will be corrected to hydrogen chloride in an addendum to the preliminary determination.

7. Comment: Stack S11, Process B10 -14.3 MMBtu/hr Cleaver Books Boiler, Natural Gas only (page 23): The emission rate for NOx is given as 1.40 pounds per hour and 6.14 tons per year for both Maximum Theoretical Emissions and Potential to Emit. Emissions were previously modeled at a rate of 1.47 pounds per hour and the current permit limits emissions to 6.44 tons per year. The permit as proposed correctly retains the annual limit of 6.44 tons per year.

7. Response: The MTEs and PTEs listed in this table are the same value – 1.40 pounds per hour – that were calculated on page 17 of the preliminary determination for the original operation permit (265006830-P01). This calculation was done using U.S. EPA emission factors.

The 1.47 pounds per hour and 6.44 tons per year are based on an emission limit elected by the facility of 1073 lb/mo averaged over any 12 consecutive months. This is the allowable limit in the permit and the value used in doing the air quality review for the nitrogen oxide air quality standard.

We will not be changing the table since the values were correctly calculated using EPA emission factors. For natural gas combustion units, when the MTEs are less than the allowable emission rates, the PTEs are the same as the MTEs. This emission summary does not affect the emission limitations in the permit.

8. Comment: On page 23 – Table of emissions for S12, Process P30, Mineral Wool Cupola. As noted previously, we believe the Department overstates the sulfur dioxide emission rate.

8. Response: We acknowledge the comment and believe we have answered it in response number 3. above.

9. Comment: Stack S13, Process P32- No.1 Acoustical Tile Dryer, 110 MMBtu/hr, Natural Gas (page 25): The current and the proposed permit limit VOC PTE to 24.9 tpy; limit NOx to 49.5 tpy; and PM to 1.25 lb/hour and therefore 5.5 tpy. These figures should be presented in the table that appears on page 25 of the Preliminary Determination.

9. Response: Our response is similar to the response to comment 7. above.

The MTEs and PTEs listed in this table are based on the U.S. EPA emission factors in AP-42. They were originally calculated in the preliminary determination for the original operation permit (265006830-P01).

The numbers referred to in the comment - 24.9 tons of VOCs per year, 49.5 tons of NO_x per year, and 1.25 pounds of PM per hour - are the allowable emission limits elected by the facility as part of that original operation permit. (The NO_x limit elected by the facility is 8249 lb/hr which is equivalent to 49.5 tons/yr.)

Similar to the response to comment 7, we are not making any change to the tables for the values for PM and NO_x as the values were calculated correctly from U.S. EPA emission factors. The calculations for PM

and NO_x result in MTE and PTE values that are less than the elected emission rates used in the operation permit. When the MTEs of an emission unit are less than the allowable emission rates, the PTEs are the same as the MTEs. This does not invalidate the calculations and there is no reason to change the table.

The elected emission limits of 1.25 lb/hr for PM and 8,249 lb/mo for NO_x are in the original operation permit and remain in the draft renewal permit.

For VOCs, the comment is correct. The value listed in the table for MTE and PTE (26.32 ton/yr) was calculated with U.S. EPA emission factors. But this value is greater than the elected VOC limit of 24.9 ton/yr. Since the elected limit (and the allowable limit in the permit condition) is less than the calculated PTEs, the table should have listed the PTEs as 24.9 ton/yr (instead of 26.32 ton/yr). This will be corrected in the addendum to the preliminary determination.

A note will be added to the addendum stating "The annual PTE of VOCs are based on the elected permit emission limit of 4,150 pounds per month averaged over 12 consecutive months.

10. Comment: Stack S14, Process P34, Control Device C14 - No.1 Spray Paint (page 26): The current and proposed permit both limit VOC emissions to 24.9 tons per year by allowing that paint formulations may be changed in the future. This figure should be included in the table in place of 6.43 tons per year. The hourly emission rate shown as maximum theoretical and potential should not be construed as limitations.

10. Response: The response to this comment is in two parts. First, the facility elected to limit VOC emissions to 4,150 lb/mo on a 12 month rolling average. This is equivalent to 24.9 tons in any 12 month period. This limit is in the original operation permit (265006830-P01) and is carried into the draft renewal permit (265006830-P10).
The values for P34 on Page 26 of the preliminary determination (PD) are the calculated MTE and PTE from the preliminary determination for operation permit 265006830-P01. These estimated values in the table were calculated from the VOC information supplied by the facility in the original operation permit application. The table values are significantly lower (1.43 lb/hr, 6.43 tons/yr) than the elected emission rate in the permit of 4,150 lb/mo on a 12 month rolling average.
According to the preliminary determination document for operation permit 265006830-P01, it appears that this election was made, so that 85% control required in s. NR 424.03(2) could be presumed to be infeasible in accordance with LACT memo dated February 27, 1995. The cut point was 25 tons/yr so the facility accepted a limit at the equivalent of 24.9 tons per year. The calculations in the PD (1.43 lb/hr, 6.43 tons/yr) are not meant to imply a limit on VOC emissions at this level.
Upon further consideration, due to the potential changes of paint formulations, it is determined that the yearly MTEs and PTEs of VOCs for Process P34 should be changed to 24.9 tons per year in the emission summary table on Page 26. The hourly MTEs and PTEs of VOCs from Process P34 should be changed to 5.68 lb/hr [24.9 ton/yr x 2000 lb/ton / 8760 hr/yr = 5.68 lb/hr]. A note will be added to this table in the addendum to the current PD stating "The annual PTE of VOCs are based on the existing emission limit of 4,150 pounds per month averaged over 12 consecutive months."

11. Comment: Stack S18, Processes P38, Control Device C18 - No.2 Spray Paint (page 26): The current and proposed permit both limit VOC emissions to 24.9 tons per year, allowing that paint formulations may be changed in the future. This figure should be included in the table in place of 9.25 tons per year.

The hourly emission rate shown as maximum theoretical and potential should not be construed as limitations.

11. Response: This is very similar to the discussion in response 10. above. The emission summary in the PD does not affect the emission limitations in the permit. The VOC emission rates (2.11 lb/hr and 9.25 ton/yr) were provided by the permittee during the review of operation permit 265006830-P01 and were not changed because no changes were described in the operation permit renewal application. According to the preliminary determination document for operation permit 265006830-P01, it appears that this election was made, so that 85% control required in s. NR 424.03(2) could be presumed to be infeasible in accordance with a LACT guidance memo dated February 27, 1995. Upon further consideration, due to the potential changes of paint formulations, it is determined that the yearly MTEs and PTEs of VOCs for Process P38 should be changed to 24.9 tons per year in the emission summary table on Page 26. The hourly MTEs and PTEs of VOCs from Process P38 should be changed to 5.68 lb/hr [24.9 ton/yr x 2000 lb/ton / 8760 hr/yr = 5.68 lb/hr]. A note will be added to this table in an addendum to the current PD stating "The annual PTE of VOCs are based on the existing emission limit of 4,150 pounds per month averaged over 12 consecutive months."

12. Comment: Stacks S21, S22, and S24, Process P31, Control Devices C02, C03 and C04 - Mineral Wool Blow Chamber (page 27): The equipment identified as control devices, C02, C03, and C04 are integral to the process as part of the material recovery operations, as documented previously on pages 15 – 16 of the Preliminary Determination. As such, it is our opinion that Maximum Theoretical Emission Rates are substantially less than what is stated in the table, and should be equal to the Potential to Emit.

12. Response: According to the memo dated July 15, 1985, the dry filters for Process P31 are part of the process because fibers collected by dry filters are returned back to the blow chamber for further processing. Thus, the MTEs of PM, PM_{10}, and $PM_{2.5}$ from Process P31 will be changed to be the same as their PTEs in the addendum to the preliminary determination.

13. Comment: Total Facility Emissions After Issuance of the Renewed Permit. (page 28): Fugitive emissions should not be included in the assessment for major source status because USG's facility is not included in the source categories listed in NR 407.02(4)(b) and its ceiling tile manufacturing operation is not subject to NESHAP or NSPS requirements.

13. Response: A note will be added to this table in the addendum to the preliminary determination to explain that "The potential to emit listed in this table includes the fugitive emissions. However, per s. NR 407.02(4)(b), Wis. Adm. Code, fugitive emissions are not considered in determining whether the facility is a major source."

14. Comment: Reformat the last two rows of the table on page 28 to indicate that a source is major for GHG only if GHG is 100 tpy or more and CO_2-e is 100,000 tpy or more, as indicated on page 29.

14. Response: The department will continue calculating facility-wide GHG emissions but will not make reference to GHG thresholds in preliminary determinations in light of the June 23, 2014 U.S. Supreme Court decision *Utility Air Regulatory Group v. EPA.*

15. Comment: The permittee commented on the accuracy of the emission rates of the criteria pollutants listed in Total Facility Emissions section on Page 28.

15. Response: The facility-wide criteria pollutant emissions will be corrected as follows in an addendum

to the preliminary determination:

Criteria Pollutants Emissions.

Pollutant	Potential to Emit (PTE)		Maximum Theoretical Emissions (MTE)	Major Source Threshold (MST)
	lbs/hour	tons/year	tons/year	tons/year
PM	30.17	132.11	~~37,215~~ 36,672	n/a
PM_{10}	27.16	110.52	~~37,178~~ 36,640	100
$PM_{2.5}$	25.06	109.69	~~37,177~~ 36,639	n/a
CO	263.42	1137.9	12,638	100
NO_x	34.35	142.62	143	100
SO_2	261.88	~~1147.00~~ 985.83	1147	100
VOCs	23.34	~~102.12~~ 136.24	~~102~~ 123	100
GHG (CO_2 equivalent)	25,051.38	109,329.4	109,329	~~100,000~~ see note 2
GHG	24,898.08	108,673.7	108,674	~~100~~ see note 2

Note:

1. The potential to emit listed in this table includes the fugitive emissions. However, per s. NR 407.02(4)(b), Wis. Adm. Code, fugitive emissions are not considered in determining whether the facility is a major source.
2. The department will continue calculating facility-wide GHG emissions but will not make reference to GHG thresholds in preliminary determinations in light of the June 23, 2014 *U.S. Supreme Court decision Utility Air Regulatory Group v. EPA*.

II. Responses to Comments from U.S. EPA

1. Comment: On page 16 of the Preliminary Determination (PD), it states that, ".. .the permittee elected to limit federal HAPs to less than 10 tons per year for any single HAP and 25 tons per year for all HAP combined. .. .The permittee is required to use the thermal oxidizer and baghouses to control HAP emissions." On page 10 of the PD, regarding the control device for the mineral wool cupola, it states that "The control efficiency is assumed to be 99% for all HAPs." Please explain the basis for this assumption. Is operation at 99% efficiency necessary and being relied upon in order for the HAPs to remain under the 10 tpy and 25 tpy limits? If so, why isn't there a requirement in the permit for the 99%o efficiency? Is there verification that maintaining the pressure drop across the baghouse between 0.5 and 10 inches of water will ensure a control efficiency of 99%.

1. Response: We do not rely on a numerical control efficiency for demonstration of compliance with the 10 tpy and 25 tpy limits. Rather, the controlled stack test results and emission factors in AP-42 are relied on to estimate the potential emissions.

On page 10 of the preliminary determination it states:

"For this renewal, the permittee estimated potential emissions (after control devices) using the stack test results for 13 HAPs and emission factors for bituminous coal combustion from AP-42 Section1.1 for other HAPs….. Except carbonyl sulfide, the maximum theoretical emissions are back calculated from their respective PTEs using the control efficiency. The control efficiency is assumed to be 99% for all HAPs."

The assumed control efficiency (99%) was provided by the permittee for purposes of back calculating the MTEs only, i.e. MTEs = PTEs / (1-99%). The PTEs are based on either emission factors from Table 1.1-13 of AP-42 for controlled coal combustion, or the emission test results, which were from the emission tests conducted on the cupola (Process P30) on September 22 and 23, 2010 as part of EPA's Information Collection Request in conjunction with the US EPA's re-evaluation of Mineral Wool NESHAP. These test results are the after-control emission rates. The control efficiency was not tested.

For 12 HAPs that are tested and are controlled by the baghouse, considering baghouses typically have a control efficiency of 99% or better, this assumption was accepted for these HAPs. For other HAPs, except carbonyl sulfide, due to lack of better data and their low potential emission rates, it is determined that 99% control efficiency is acceptable for purposes of back calculating the MTEs. For carbonyl sulfide, the MTE of 3 pounds per ton is the uncontrolled emission rate from a stack testing done at a sister facility and the PTE is from the 2010 emission testing referenced above.

As for the pressure drop range, it was provided by the permittee and the permittee indicated that, based on many years of operating experience, the range between 0.5 and 10 inches of water column ensures proper operation of the baghouse. Since we are relying on controlled stack test results to estimate emissions rather than a numerical control efficiency, we believe pressure drop is an adequate method of compliance demonstration.

In addition, in Section I.ZZZ.1.b., the permittee is also required to keep records of HAP emission from the entire facility to demonstrate compliance.

2. Comment: The permit should explain why maintaining the pressure drop across the baghouse for the mineral wool cupola between 0.5 and 10 inches of water will ensure that the 1.50 lb/hr of Particulate Matter (PM) limit. The PD for the original TV permit states that the 1.50 lb/hr limit was "based on the

results of a 2002 cupola stack test". (p. 19) If this limit still relies on the 2002 stack test, the permit should require that the same operating conditions exist that existed during the stack test. Note that if a particular control efficiency is being relied upon or assumed to meet the limit, then that control efficiency should be included in the permit. EPA's Memorandum, "Guidance on Limiting Potential to Emit in New Source Permitting" from June 13, 1989 states, "When permits require add-on controls operated at a specified efficiency level, permit writers should include, so that the operating efficiency condition isenforceable as a practical matter, those operating parameters and assumptions which the permitting agency depended upon to determine that the control equipment would have a given efficiency." (p. 7)

2. Response: A numerical control efficiency is not being relied upon to meet the limit for this process. Rather, the stack test results and the proper operation of the baghouse are used to demonstrate compliance.

As stated on Page 19 of the preliminary determination for operation permit 265006830-P01, emission limit of 1.5 lb/hr was elected by the permittee to ensure NAAQS are maintained, not based on the stack test results. Compliance with the 1.5 lb/hr elected limit was demonstrated by a 2002 stack test. The stack test result showed a particulate emission rate of 0.001 gr/dscf. Given the flow rate at the time of the test, this represents an emission rate of 0.12 lb/hr, well in compliance with the elected limit of 1.5 lb/hr.

The previous inspection reports and compliance/monitoring reports are reviewed and the pressure drop reading was within the required range (between 0.5 and 10 inches of water column) during the 2002 stack test. Therefore, it is determined that a sufficient compliance demonstration is to maintain the pressure drop across the baghouse at the same range shown during the stack test. . Maintaining pressure drop across the baghouse ensures the baghouse is operated properly and emission limits are met.

3. Comment: The compliance demonstration for the 20% opacity limit for the cupola (which fires coke in addition to natural gas) is to use the baghouse/fabric filter dust collector, but there are no requirements to operate the control equipment at any given efficiency, monitor the pressure drop, inspect the control device, or ensure it is operating properly. Thus, it's not clear how the 20% opacity limit will be met, or whether a certain control efficiency is being assumed or being relied upon. Please include additional compliance measures or explain why they are not necessary in this situation.

3. Response: This was an error in the draft permit. We have corrected it by adding a compliance demonstration condition for visible emissions that links to the pressure drop range for the particulate matter limit. The added condition will be:

> I.B.2.b.(3) The permittee shall comply with the requirements in I.B.1.b.(3) **[s. NR 407.09(4)(a)3.b., Wis. Adm. Code]**

This is a routine compliance demonstration requirement in our operation permits.

4. Comment: The compliance demonstration in the permit for the Particulate Matter (PM) limit for the mineral wool blow chamber is to use the three dry filters and "monitor the pressure drop across the dry filters…The pressure drop across the baghouse/fabric filter shall be maintained between 0.5 and 10 inches of water…" First, the permit is not clear whether the pressure drop is to be measured across each of the three dry filters, or as a total across all three filters. Please clarify. In addition, the PD to the original TV permit states that the PM Potential To Emit (PTE) is based on fabric filter stack tests, and that the PM PTE is shown to be 13.71 lb/hr which meets the limit of 14.02 lb/hr. However, since the original Title V permit was issued, the dry filter configuration has changed. Given the change in configuration, a new test should be required or the permit record should explain why a new test is not warranted. Note that ifa

particular control efficiency is being relied upon or assumed to meet the limit, then that control efficiency and operating conditions during the testing should be included in the permit.

4. Response: In the header rows of Section I.H. of the draft permit, the last sentence states "Emissions are controlled by dry filters." As described on page 5 of the preliminary determination and the Preamble of the draft permit, there are three parallel dry filters (2 vertical and 1 horizontal) being used to control emissions. The pressure drop is to be measured across each of the three dry filters. Condition I.H.1.b.(2) will be revised as follows to clarify:

"The permittee shall monitor the pressure drop across ~~the~~ each dry filter once every 8 hours of source operation or once per day, whichever yields the greater number of measurements. The pressure drop across ~~the~~ each baghouse/fabric filter shall be maintained between 0.5 and 10 inches of water column, or a range approved by the department, in writing. **[ss. NR 407.09(4)(a)3.b. and NR 439.055(1)(a) and (2)(b), Wis. Adm. Code, Permit Number 07-MCS-323]"**

In regard to the comment on the emission limit of 14.02 lb/hr, the most recent stack test on this process was done in 2000 and showed an emission rate of 11.95 lb/hr. At that time, there were total of five fabric filters and each filter had its own exhaust stack. Since then, the permittee has removed two filters and redirected the air flow to the existing No. 5 dry filters. In the preliminary determination document for operation permit 265006830-P01, the PTE of 13.71 lb/hr for the mineral wool blow chamber was estimated using an emission rate of 0.01 gr/dscf and a flow rate of 160,000 dscf. However, the emission test conducted in 2000 showed that emissions from several filters were more than 0.01 gr/dscf. Considering the change of the filter configuration, it is unclear if the PTEs are below the emission limit of 14.02 lb/hr. Accordingly, we agree that another stack test is necessary to verify compliance with the particulate matter emission limit of 14.02 lb/hr.

Condition I.H.1.b.(3) will be added in the permit and read as follows:

"Within 180 days of the issuance of this permit, the permittee shall perform a compliance test on Stacks S21, S22, and S24 to demonstrate compliance with the particulate emission limit in I.H.1.a.(2). During the test, the mineral wool blow chamber (Process P31) shall be operated at capacity or at a capacity approved by the department in writing. The permittee shall monitor and record the pressure drop during the compliance testing. **[s. 285.65(3), Wis. Stats., s. NR 439.075(1), Wis. Adm. Code]**

A control efficiency is not being relied upon or assumed to meet the limit for this process. The compliance emission test will be used to demonstrate compliance. Pressure drop will be monitored during the test to verify the pressure drop range currently included in the permit and adjust it as necessary.

5. Comment: The PD for the original Title V permit states that the boilers and process heaters were subject to 40 CFR 63 Subpart DDDDD which was vacated in June 2007. Note that on January 31, 2103, the final rule for 40 CFR Part 63 National Emission Standards for Boilers and Process Heaters (Subpart DDDDD) was published, and became effective as of April 1, 2013. In addition, the Area Source Boiler final rule was published on February 1, 2013 (40 CFR Part 63 National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Institutional Boilers.) Please address the applicability of these regulations in the renewal permit.

5. Response: The applicability of 40 CFR part 63 subpart JJJJJJ – NESHAP for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boiler Area Sources, were addressed on Page 16 of the preliminary determination. The applicability of 40 CFR part 63 Subpart DDDDD was not addressed in this ren ewal, because the facility-wide federal HAP emission limits were established in operation permit

265006830-P01 and the facility is not a major source for HAP emissions. As a result of this comment, a paragraph will be added in the addendum to the preliminary determination to clarify that Boiler B10 is not subject to the requirements in 40 CFR part 63 subpart DDDDD because the facility is not a major source for HAP emissions.

6. Comment: On page 8 of the draft permit there is a note in the Limitations column of the permit, "Note: This condition supersedes the...." This note appears to be carried over from when construction permit 07-MCS-323 changed conditions in a prior construction permit 86-SJK-016. This Title V permit renewal is not changing or superseding any limitations from the 1986 construction permit or any other prior construction permit (nor can it) and thus this note should be removed. In additional this note is not an applicable permit limitation or condition and should be removed. Same comment for the similar "Notes" on pages 22, 25 and 28 of the permit.

6. Response: We agree with this comment. These notes were meant to provide explanatory background information for permit conditions. They have been moved the bottom of the page as footnotes and the wording has been revised to clarify that they were established in construction permit 07-MCS-323.

7. Comment: The note in the Limitations column on page 10 of the draft permit, "Note: The heat input rating of the cupola is 33.21 MMBtu/hr..." should also be removed. This note is not an applicable permit limitation or condition and there is no legal origin and authority for this note. Furthermore, because compliance with the federally approved version of NR 417.07 is assessed by measuring the entire stack emissions of sulfur dioxide, without discarding any non-fuel based portions of the emissions, the substance of the footnote is inconsistent with the applicable requirement in the state implementation plan.

7. Response: We do not agree with this comment. This note is not intended be an enforceable conditions or to change the applicable emission limitation in s. NR 417.07. The note was originally included in the 265006830-P10 operation permit to set out clearly the Department's interpretation of the emission limit. This interpretation of NR 417.07(2)(b), Wis. Adm. Code, was verified by the Department's Bureau of Legal Services in a legal opinion dated March 14, 2014, attached to this response to comments. It is clear that when the Department adopted the sulfur dioxide emission limit of 5.5 lb SO_2/MM Btu, the limit was intended to apply only to fuel burning emissions, and not any process related emissions. The content of the footnote is consistent with the Department's rule interpretation. The amount of confusion on how this limit should be applied reinforces the need for an explanatory footnote. Upon further discussion between US EPA and the department, the footnote will be removed. The memo dated March 14, 2014, attached to this response to comments, will be referred to for clarification of the rule applicability. In addition, to verify the emission estimation and demonstrate that the NAAQS are indeed protected, Condition I.B.3.b.(5) will be added to require a stack testing of sulfur dioxide emissions from the mineral wool copula. Please refer to the proposed permit for details.

8. Comment: Condition ZZZ. 1 .a. of the permit limits any Federal HAP to no more than 1,666 lb/mo and the total of all Federal HAPs to no more than 4,166 lb/mo. This limit applies to the total facility. However, a blanket emission limit over the entire facility is not practically enforceable. An emission limit alone, "would limit potential to emit only when it reflects the absolute maximum that the source could emit without controls or other operational restrictions." See page 7 or EPA's 1989 Memorandum, "Guidance on Limiting Potential to Emit in New Source Permitting". Further, the permit must contain a production or operational limitation in addition to the emission limitation in cases where the emission limitation does not reflect the maximum emissions of the sources operating at full design capacity without pollution control equipment. Restrictions on production

or operation that will limit potential to emit include limitations on quantities of raw materials consumed, fuel combusted, hours of operation, or conditions which specify that the source must install and maintain controls that reduce emissions to a specified emission rate or to a specified efficiency level."(p. 5 of the 1989 Memorandum) It is unclear how the HAP limits will be achieved. The compliance demonstration in the permit requires operating the control devices (baghouse and afterburner) on the mineral wool cupola, and also determining the HAPs "present or emitted" for "each material used or applied". This compliance demonstration method and associated monitoring, record keeping and reporting is not enforceable as a practical manner because the method for determining and measuring HAPs from all of the units at the facility will vary. (For example, the method used to determine emissions from the curing oven may be different from the method used to determine emissions from the mineral wool blow chamber, etc.) The permit requires the permittee to "determine, either analytically or through the use of published literature (e.g. MSDS or AP-42)… the identity of all federal HAPs present or emitted…" which may be practical for the coating operations, but it is unclear what methods will be used to determine emissions from all of the other units at the facility. The permit should clarify how the facility will determine the HAPs "present or emitted" for "each material used or applied" for all units.

8. Response: Among all the federal HAPs emitted from the facility, the majority are emitted from the mineral wool cupola (Process P30). Emission calculation using the 2010 emission testing results and the emission factors from AP-42 document showed that the facility-wide potential emissions of each federal HAP other than hydrogen chloride are much less than 1,666 pounds per month and the facility-wide potential emissions of all federal HAPs combined except hydrogen chloride are much less than 14.9 tons per year, or 2,483.33 pounds per month. Hydrogen chloride is the only pollutant that has the potential to emit more than 1,666 pounds per month and Process P30 is the only process emitting hydrogen chloride at the facility. Therefore, it would be sufficient to demonstrate compliance for HAPs other than hydrogen chloride by requiring records of calculations of the maximum theoretical emissions from processes other than Process P30 and calculations of the potential emissions from Process P30. For hydrogen chloride emissions, record keeping requirements will be the detailed actual emission calculations.

Accordingly, we could remove Condition I.ZZZ.1.b.(3), revise Conditions I.ZZZ.1.b.(2), and add additional condition I.ZZZ.1.b.(3) and (4):

"(2) The permittee shall use the following methods to determine emissions of the federal hazardous air pollutants (HAPs), as identified in Section 112(b) of the Clean Air Act.

(a) Emissions from External Natural Gas Combustion Operations: The permittee shall use hazardous air pollutant emission factors in Section 1.4 of the most recent version US EPA AP-42 document, US EPA's Web Fire Factors, or other emission data requested by the permittee and approved by the department in writing, to calculate federal HAP emissions from Boiler B10, Processes P32, P34A, and P38A, and any other miscellaneous external natural gas combustion operations. If a range is given within a reference, the highest value in the range shall be used.

(b) Emissions from Internal Natural Gas Combustion Operations: The permittee shall use hazardous air pollutant emission factors in Section 3.2 of the most recent version US EPA AP-42 document, US EPA's Web Fire Factors, or other emission data requested by the permittee and approved by the department in writing, to calculate federal HAP emissions from Process P11. If a range is given within a reference, the highest value in the range shall be used.

(c) Emissions from Stationary Diesel Fuel Internal Combustion Operations: The permittee shall use hazardous air pollutant emission factors in Section 3.3 of the most recent version US EPA AP-42 document, US EPA's Web Fire Factors, or other emission data requested by the permittee and approved by the department in writing, to calculate federal HAP emissions from any internal diesel fueled combustion engines. If a range is given within a reference, the highest value in the range shall be used.

(d) Emissions from the Mineral Wool Cupola: The permittee shall use hazardous air pollutant emission factors in Section 1.1 (for bituminous coal combustion), Section 1.4 (for natural gas combustion) of the most recent version US EPA AP-42 document, or US EPA's Web Fire Factors, the most recent emission test results, or other emission data requested by the permittee and approved by the department in writing, to calculate federal hazardous air pollutant emissions from the mineral wool cupola (Process P30). If a range is given within a reference, the highest value in the range shall be used.

(e) Emissions from Coatings and Cleanup Solvents: The permittee shall use hazardous air pollutant data from Material safety Data Sheets (MSDS), Safety Data Sheet (SDS), material test data, an equivalent document provided by the supplier of the raw materials, or an equivalent source requested by the permittee and approved by the department in writing, to calculate federal HAP emissions from any coating and cleanup solvent operations. If a range is given within a reference, the highest value in the range shall be used.

[ss. NR 407.09(4)(a)1. and 3.b., Wis. Adm. Code.]"

"(3) The permittee shall determine monthly HAP emissions for each process using the following methods: [1]

(a) For emission units other than the mineral wool cupola (Process P30), the permittee shall calculate the maximum theoretical emissions, in units of pounds per month, for each federal HAP emitted using the following method:

$E_{MTE} = (EF) * T_{max} * 730$

Where,

E_{MTE} = the maximum theoretical emissions, in pounds per month, for each HAP;

EF = emission factors specified in I.ZZZ.1.b.(2) for each federal HAP;

T_{max} = the maximum designed heat input, the maximum designed fuel consumption, or the maximum throughput;

730 is the average hours of operation per month assuming the unit is being operated 24 hours a day and 7 days a week. 730 hours per month is derived by dividing 8760 hour per year by 12 months.

[1] Emission calculation using the 2010 emission testing results and the emission factors from AP-42 document showed that the facility-wide potential emissions of each federal HAP other than hydrogen chloride are much less than 1,666 pounds per month and the facility-wide potential emissions of all federal HAPs combined, except hydrogen chloride, are much less than 14.9 tons per year, or 2,483.33 pounds per month. Hydrogen chloride is the only pollutant that needs additional limitations to keep its potential to emit less than 1,666 pounds per month and Process P30 is the only process emitting hydrogen chloride at the facility.

(b) For the mineral wool cupola (Process P30), the permittee shall calculate the potential emissions, in units of pounds per month, for each federal HAP emitted except hydrogen chloride, using the following method:

$E_{PTE} = (EF) * T_{max} * 730$

Where,

E_{PTE} = the potential emissions, in pounds per month, for each HAP;

EF = emission factors specified in I.ZZZ.1.b.(2)(d);

T_{max} = the maximum fuel throughput, or the capacity of the total material charged (11.5 ton/hr);

730 is the average hours of operation per month assuming the unit is being operated 24 hours a day and 7 days a week. 730 hours per month is derived by dividing 8760 hour per year by 12 months.

(c) For the mineral wool cupola (Process P30), the permittee shall calculate the actual emissions of hydrogen chloride using the following method:

$E_{HCl} = (EF_{HCl}) * T_{monthly}$

Where,

E_{HCl} = the actual emissions of hydrogen chloride, in pounds per month;

EF_{HCl} = the emission factor from the most recent emission test results, or any other data requested by the permittee and approved by the department, in writing, for hydrogen chloride, in pounds per ton of total material charged;

$T_{monthly}$ = the total material charged, in tons per month.

[ss. NR 407.09(4)(a)1. and 3.b., Wis. Adm. Code.]"

"(4) Within 15 business days of the end of each calendar month, the permittee shall calculate the facility-wide monthly emissions of hydrogen chloride, averaged over the previous 12 consecutive months, in unit of pounds per month, for the preceding month. [ss. NR 407.09(4)(a)1. and 3.b., Wis. Adm. Code.]"

9. Comment: Did the Natural Gas Fired Emergency Water Pump that was installed in November 2012 receive either a permit, or permit exemption? It should be listed for this unit in the Historical Summary in the preamble to the permit, or the PD should explain why one was not necessary.

9. Response: Clarifying information will added in an addendum to the preliminary determination. The permittee states in a letter dated May 1, 2013, that this unit is natural gas-fired spark ignition engine powered emergency generator. This generator generates backup electricity to run water pump motors during periods of electricity interruption. The power output of the genset is 60 kW. This unit is exempt from a construction permit under the direct source exemption in s. NR 406.04(1)(w), Wis. Adm. Code, for emergency electrical generators that have an electrical output of less than 3,000 kilowatts. There is no formal permit exemption issued for this unit. The Department only issues the construction permit exemption if the facility applies for it. Wisconsin law does not require a source to get a formal exemption from the department if it believes it meets one of the construction permit exemption criteria.

10. Comment: Footnote #17 on page 31 of the permit indicates that the emergency generators are not being operated for more than 15 hours per year and thus certain reporting requirements in Part 60 are not

applicable. Assuming that this footnote is referring to the Emergency Water Pump, there is nothing in the permit to prohibit the unit from being operated for more than 15 hours per year. In fact, condition J.1 .b.(3)(b) on page 32 of the permit states that the unit may be operated for a maximum of 100 hours per calendar year. Please explain and include in the permit a limit on the hours of operation if one is necessary.

10. Response: Footnote number 17 was an effort to clarify part of the NSPS rule for Stationary Spark Ignition Internal Combustion Engines that apply to the emergency gensets. After receiving this comment, we went back and looked at the NSPS again and have found that footnote number 17 is unnecessary and can be removed from the draft permit.

In §60.4245(e) of the NSPS, it states that the requirements in §60.4243(d)(2)(ii) and (iii) and §60.4243(d)(3)(i) (which is what footnote 17 was all about) only apply if the emergency SI ICE has a maximum engine power more than 100 HP or is contractually obligated to be available for more than 15 hours per calendar year.

The natural gas-fired engine used in Process P30 has a rated capacity of 97.5 HP and it is not contractually obligated to be available for more than 15 hours per calendar year. Based on this information, footnote number 17 has been deleted from the draft permit.

III. Changes Made to Draft Permit 265006830-P10

- Note for Condition I.B.3.a.(1) on Page 11
  This note is removed from the permit.
  "~~Note: The heat input rating of the cupola is 33.21 MMBtu/hr, which equates to a sulfur dioxide emission limitation of 182.66 lb/hr. This emission limitation applies only to the fuel burned (i.e. coke, natural gas), and does not include raw materials (slag, brick chips, etc.) added to the cupola.~~"

- Condition I.B.3.b.(5)
  Condition I.B.3.b.(5) will be added, as follows, to require a stack testing of sulfur dioxide emissions from the mineral wool copula.
  "(5) The permittee shall perform a compliance emission testing of the cupola (Stack S12) within 180 days of issuance of this permit. The permittee may request and the department may approve in writing an extension to conduct the testing. The permittee shall provide to the department a written description of the event and a rational for attributing the delay in testing. **[s.285.65(3), Wis. Stats., and ss. NR 407.09(4)(a)1. and NR 439.07, Wis. Adm. Code]**"

- Condition I.B.5.c.(4)
  "Thermal couple" is corrected to "thermocouple".
- Section I.B.6.
  Requirements in this section are moved to Section I.ZZZ.6. Section I.B.6. is changed to

Pollutant	**a. Limitations**	**b. Compliance Demonstration**	**c. Reference Test Methods, Recordkeeping and Monitoring Requirements**
6. State Hazardous Air Pollutants *	**(1)** The permittee shall comply with requirements in I.ZZZ.6.a. **[s. 285.65(7), Wis. Stats., ss. NR 445.07 and NR 445.08, Wis. Adm. Code]**	**(1)** The permittee shall comply with requirements in I.ZZZ.6.b. to demonstrate compliance. **[s. NR 407.09(4)(a)3.b., Wis. Adm. Code] ***	(1) Whenever any hazardous air pollutant concentration or emission rate testing of any material is required for demonstrating compliance, the permittee shall use a test method and testing protocol approved by either the US EPA or the Department. **[ss. NR 407.09(1)(c)1.a. & 4(a)1. and NR 439.06(8), Wis. Adm. Code]*** (2) The permittee shall comply with requirements in I.ZZZ.6.c. **[ss. NR 407.09(1)(c)1.b. & (4)(a)1., and NR 439.04(1)(d), Wis. Adm. Code]***

- Section I.ZZZ.6.
  Conditions I.B.6.a.(1) – (3) in the draft permit are moved to this section as Conditions I.ZZZ.6.a.(3) – (5).
  Condition I.B.6.b.(1) in the draft permit are moved to this section as Condition I.ZZZ.6.b.(4).
  Condition I.B.6.c.(2) in the draft permit are moved to this section as Condition I.ZZZ.6.c.(2).

- Condition I.H.1.c.(3)
  The time interval between inspections is changed as follows: "(3) ….The time interval between inspections shall be ~~as specified in the Malfunction Prevention and Abatement Plan~~ monthly….."

- Condition I.J.1.a.(1)(b)
  The reference is corrected from "**s. 285.65(13), Wis. Stats. and 40 CFR §60.4233(e)**" to "**s. 285.65(13), Wis. Stats. and 40 CFR §60.4233(d)**".
- Condition I.J.1.b.(4)
  Removed "In addition, an owner or operator of a stationary SI internal combustion engine greater than or equal to 100 hp and less than or equal to 500 hp must conduct an initial performance test within 1 year of engine startup to demonstrate compliance."

- Condition I.J.1.a.(1)(a)

"Either" is deleted.

- Condition I.J.1.b.(1)
  The spelling of "stationary" is corrected.
- Condition I.J.1.c.(1)
  The spelling of "nonresettable" is corrected.
- Condition I.J.1.b.(3)
  "… If the permittee do not operate the engine…" is changed to "… If the permittee does not operation the engine…".
- Condition I.J.1.b.(4)
  "If the permittee do not operate the engine…" is changed to "If the permittee does not operation the engine…".
- Conditions II.C.2.o. and II.M.2.
  An asterisk (*) is added.
- Condition s I.B.2.b.(3) and I.B.2.c.(3)
  Conditions I.B.2.b.(3) and I.B.2.c.(3) are added as follows:

I.B.2.b.(3) The permittee shall comply with requirements in I.B.1.b.(3). **[s. NR 407.09(4)(a)3.b., Wis. Adm. Code]**

I.B.2.c.(3) The permittee shall comply with requirements in I.B.1.c.(3) –(6). [**s. NR 407.09(4)(a)1., Wis. Adm. Code]**

- Condition I.H.1.b.(2)
  This condition is revised as follows:
  (2) "The permittee shall monitor the pressure drop across ~~the~~ each dry filter~~s~~ once every 8 hours of source operation or once per day, whichever yields the greater number of measurements. The pressure drop across ~~the~~ each baghouse/fabric filter shall be maintained between 0.5 and 10 inches of water column, or a range approved by the department, in writing. **[ss. NR 407.09(4)(a)3.b. and NR 439.055(1)(a) and (2)(b), Wis. Adm. Code, Permit Number 07-MCS-323]"**
- Condition I.H.1.b.(3)
  This condition is added as follows:
  (3) Within 180 days of the issuance of this permit, the permittee shall perform a compliance test on Stacks S21, S22, and S24 to demonstrate compliance with the particulate emission limit in I.H.1.a.(2). The mineral wool blow chamber (Process P31) shall be operated at capacity or at a capacity approved by the department in writing. The permittee shall monitor and record the pressure drop during the compliance test. **[s. 285.65(3), Wis. Stats., s. NR 439.075(1), Wis. Adm. Code]**
- Notes for Conditions I.E.1.a.(2), I.G.1.a.(2), and I.H.1.b.(2)
  These notes are changed to footnotes and wordings are changed slightly as follows to clarify these three conditions were established in construction permit 07-MCS-323.

[12] This permit condition was established in construction permit 07-MSC-323 and supersedes the particulate matter emission limitations for No. 1 Acoustone Line Mold Cleaner (P39) in construction permit 86-SJK-016.
[16] This condition was established in construction permit 07-MSC-323 and supersedes particulate matter emission limitation for No. 2 Acoustone Line Saw/Edger (P37) and No. 2 Acoustone Line Paint Spray Booth (P38) in construction permit 86-SJK-016.

[18] This pressure drop range in this condition was established in construction permit 07-MCS-323 and supersedes the differential pressure requirement for the Mineral Wool Blow Chamber in construction permit 92-JSB-235.

- Footnote #17 on Page 31 of the draft permit
  This footnote is removed.

- Section I.ZZZ.1.b.
  Conditions I.ZZZ.1.b.(2) – (3) in the draft permit are deleted. More detailed record keeping requirements are added as Condition I.ZZZ.1.b.(2) – (4):

(2) The permittee shall use the following methods to determine emissions of the federal hazardous air pollutants (HAPs), as identified in Section 112(b) of the Clean Air Act.

(a) Emissions from External Natural Gas Combustion Operations: The permittee shall use hazardous air pollutant emission factors in Section 1.4 of the most recent version US EPA AP-42 document, US EPA's Web Fire Factors, or other emission data requested by the permittee and approved by the department in writing, to calculate federal HAP emissions from Boiler B10, Processes P32, P34A, and P38A, and any other miscellaneous external natural gas combustion operations. If a range is given within a reference, the highest value in the range shall be used.

(b) Emissions from Internal Natural Gas Combustion Operations: The permittee shall use hazardous air pollutant emission factors in Section 3.2 of the most recent version US EPA AP-42 document, US EPA's Web Fire Factors, or other emission data requested by the permittee and approved by the department in writing, to calculate federal HAP emissions from Process P11. If a range is given within a reference, the highest value in the range shall be used.

(c) Emissions from Stationary Diesel Fuel Internal Combustion Operations: The permittee shall use hazardous air pollutant emission factors in Section 3.3 of the most recent version US EPA AP-42 document, US EPA's Web Fire Factors, or other emission data requested by the permittee and approved by the department in writing, to calculate federal HAP emissions from any internal diesel fueled combustion engines. If a range is given within a reference, the highest value in the range shall be used.

(d) Emissions from the Mineral Wool Cupola: The permittee shall use hazardous air pollutant emission factors in Section 1.1 (for bituminous coal combustion), Section 1.4 (for natural gas combustion) of the most recent version US EPA AP-42 document, or US EPA's Web Fire Factors, the most recent emission test results, or other emission data requested by the permittee and approved by the department in writing, to calculate federal hazardous air pollutant emissions from the mineral wool cupola (Process P30). If a range is given within a reference, the highest value in the range shall be used.

(e) Emissions from Coatings and Cleanup Solvents: The permittee shall use hazardous air pollutant data from Material safety Data Sheets (MSDS), Safety Data Sheet (SDS), material test data, an equivalent document provided by the supplier of the raw materials, or an equivalent source requested by the permittee and approved by the department in writing, to calculate federal HAP emissions from any coating and cleanup solvent operations. If a range is given within a reference, the highest value in the range shall be used.

[s. NR 407.09(4)(a)1. And 3.b., Wis. Adm. Code]

(3) The permittee shall determine monthly HAP emissions for each process using the following methods:[2]

[2] Emission calculation using the 2010 emission testing results and the emission factors from AP-42 document showed that the facility-wide potential emissions of each federal HAP other than hydrogen chloride are much less than 1,666 pounds per month and the facility-wide potential emissions of all federal HAPs combined, except hydrogen chloride, are much less than 14.9 tons per year, or 2,483.33 pounds per month. Hydrogen chloride is the only pollutant that needs additional limitations to keep its potential to emit less than 1,666 pounds per month and Process P30 is the only process emitting hydrogen chloride at the facility.

(a) For emission units other than the mineral wool cupola (Process P30), the permittee shall calculate the maximum theoretical emissions, in units of pounds per month, for each federal HAP emitted using the following method:

$E_{MTE} = (EF) * T_{max} * 730$

Where,

E_{MTE} = the maximum theoretical emissions, in pounds per month, for each HAP;

EF = emission factors specified in I.ZZZ.1.b.(2) for each federal HAP;

T_{max} = the maximum designed heat input, the maximum designed fuel consumption, or the maximum throughput;

730 is the average hours of operation per month assuming the unit is being operated 24 hours a day and 7 days a week. 730 hours per month is derived by dividing 8760 hour per year by 12 months.

(b) For the mineral wool cupola (Process P30), the permittee shall calculate the potential emissions, in units of pounds per month, for each federal HAP emitted except hydrogen chloride, using the following method:

$E_{PTE} = (EF) * T_{max} * 730$

Where,
E_{PTE} = the potential emissions, in pounds per month, for each HAP;
EF = emission factors specified in I.ZZZ.1.b.(2)(d);
T_{max} = the maximum fuel throughput, or the capacity of the total material charged (11.5 ton/hr);
730 is the average hours of operation per month assuming the unit is being operated 24 hours a day and 7 days a week. 730 hours per month is derived by dividing 8760 hour per year by 12 months.

(c) For the mineral wool cupola (Process P30), the permittee shall calculate the actual emissions of hydrogen chloride using the following method:

$E_{HCl} = (EF_{HCl}) * T_{monthly}$

Where,
E_{HCl} = the actual emissions of hydrogen chloride, in pounds per month;
EF_{HCl} = the emission factor from the most recent emission test results, or any other data requested by the permittee and approved by the department, in writing, for hydrogen chloride, in pounds per ton of total material charged;
$T_{monthly}$ = the total material charged, in tons per month.

[ss. NR 407.09(4)(a)1. and 3.b., Wis. Adm. Code.]

(4) Within 15 business days of the end of each calendar month, the permittee shall calculate the facility-wide monthly emissions of hydrogen chloride, averaged over the previous 12 consecutive months, in unit of pounds per month, for the preceding month. **[s. NR 407.09(4)(a)1. And 3.b., Wis. Adm. Code]**

- Condition I.ZZZ.1.c.(3)
  This condition is revised as follows:
  (3) The records shall contain at minimum the identification of the material containing hazardous air pollutant (HAP), the HAP content of each material, ~~the amount of each material containing hazardous air pollutants used each month~~, the emission factor used for each process, the amount of material charged in Process P30 each month, the facility-wide monthly emissions of each hazardous air pollutant and the facility-wide monthly emissions of all hazardous air pollutants combined.

- Condition I.ZZZ.1.c.(4)
  This condition is revised as follows:
  (4) The permittee shall calculate facility-wide monthly HAP emissions, and monthly HAP emissions averaged over the previous 12 consecutive months. ~~The HAP content of the materials used at facility shall be determined from Material Safety Data Sheets (MSDS), manufacturer's product specification sheet, or other vendor data.~~ The monthly emissions from each process shall be determined in accordance with methods specified in I.ZZZ.1.b.(2) and (3). **[s. 285.65(3), Wis. Stats., and s. NR 439.04(1)(d), Wis. Adm. Code.]**

- Condition I.ZZZ.3.b.(2)
  Effective 9/15/2014, Title V facilities in Wisconsin are no longer required to submit compliance certifications to the US EPA. Accordingly, US EPA is removed from Condition I.ZZZ.3.b.(2).

cc: George A. Volpentesta - Southeast Region Air Program, Waukesha Service Center

Attachment

CORRESPONDENCE/MEMORANDUM — State of Wisconsin

DATE: March 14, 2014

TO: Kristin Hart, Permit Section Chief and Dan Schramm, Southeast Regional Manager

FROM: Kendra Fisher, Bureau of Legal Services

SUBJECT: Interpretation of NR 417.07(2)(b), Wis. Adm. Code Sulfur Dioxide limit and Impact on USG Interiors Operation Permit

Background:

In the operation permit for USG Interiors (permit 265006830-P01), permit condition I.B.3.a.(1) limits sulfur dioxide emissions from the cupola to not more than 5.5 pounds of sulfur dioxide per million BTU heat input. A footnote for this limit states: "The heat input rating of the cupolais 33.21 mmBtu/hr, which equates to a sulfur dioxide emission limitation of 182.66 lb/hr. This emission limitation applies only to the fuel burned (i.e. coke, natural gas), and does not include raw materials (slag, brick chips, etc.) added to the cupola." This permit limit stems from a sulfur dioxide (SO_2) administrative code requirement found at s. NR 417.07(2)(b), Wis. Adm. Code.

As a result of a recent EPA lead compliance inspection at USG Interiors, staff at EPA Region 5 inquired regarding WDNR's interpretation of the SO_2 limit found at s. NR 417.07(2)(b), Wis. Adm. Code.

Question:

EPA would like to know whether WDNR interprets "may not emit from any stack more than 5.5 pounds of sulfur dioxide per million Btu heat input" to include SO_2 emissions from any raw material used, or to only include SO_2 emissions from the fuel used, when determining whether the 5.5 pounds of SO_2 per million Btu heat input is being met. Could you please provide us with your interpretation?

Analysis of s. NR 417.05(2)(b), Wis. Adm. Code:

s. NR 417.05, Wis. Adm. Code contains the following SO_2 emission limits for existing sources:

> "(2) EMISSION LIMITS FOR EXISTING SOURCES. Except as provided under sub. (5) or (8), no person may cause, allow or permit sulfur dioxide to be emitted to the ambient air from any direct source constructed on or before February 1, 1985, in amounts greater than those specified in this subsection.
>
> (b) Any steam generating unit or other fuel burning equipment firing solid fossil fuel at a facility which has a total heat input capacity on solid fossil fuel of less than 250 million Btu per hour may not emit *from any stack* more than 5.5 pounds of sulfur dioxide per million Btu heat input." (emphasis added)

The limit at s. NR 417.05(2)(b), Wis. Adm. Code was original promulgated in 1985 under different numbering (see Board Order A-24-84 found at https://docs.legis.wisconsin.gov/code/archive/1985/349b/rules/register_349_cr_84_83_ch_nr_154.pdf) The original citation for this limit was s. NR 154.12(11)(b)2., Wis. Adm. Code and the limit read as follows:

> "2. Any steam generating unit or other fuel burning equipment firing solid fossil fuel at a facility which has a total heat input capacity on solid fossil fuel of less than 250 million BTU per hour may not emit more than 5.5 pounds of sulfur dioxide per million BTU heat input *from the fuel burning equipment to any stack.*" (emphasis added)

In reviewing the history and public input to the original rule promulgated under A-24-84, several details on intent become clear. The Department summarized the purpose of the rule as follows:

> "The creation of Section NR 154.12(11), Wis. Adm. Code sets categorical emission limits for solid fossil fuels and residual oil burning equipment and for processes in pulp mills and kraft mills, and for petroleum refineries. The rule ensures attainment with the ambient air quality standards for sources of sulfur dioxide in the State of Wisconsin"

Throughout the background documents and responses to comments received, the Department consistently refers to the 5.5 lbs SO_2/mmBTU limit, and the corresponding 3.2 lbs SO_2/mmBTU limit for facilities with a heat input capacity of greater than 250 million BTU per hour, in the context of the fuel used. The numbers chosen for the fuel burning limits were based on what limits on solid fossil fuel for coal fired boilers were considered reasonable at the time of the rule. This is clearly delineated in the response to comment 50, found on page 22 of the August 28, 1984 memorandum from Donald Theiler to C.D. Besadny.

> "The 5.5 lb SO_2 /mmBTU limit was installed in the rule in order to prevent very high sulfur coals from being routinely burned in Wisconsin. This SO_2/mmBTU limit should not significantly affect any industry in Wisconsin. It has been determined by Department staff that coal supplies to the meet the 5.5 lb SO_2/mmBTU limit are abundant and available at very reasonable costs. The staff feels that unless the use of fuels cleaner than 5.5 lb SO_2/mmBTU would present an unreasonable burden on the facility this type of coals should be routinely used in Wisconsin."

See also response to comment 11, August 28, 1984 memorandum from Donald Theiler to C.D. Besadny, page 9.

Additionally, the original proposed language for the emission limits (3.2 lb SO_2/mmBTU and 5.5 lbs SO_2 mmBTU respectively) did not contain a reference to the stack. This was added as a result of comments received to address the situation of more than one boiler directed to a single stack. (*see* response to comment 14, August 28, 1984 memorandum from Donald Theiler to C.D. Besadny, page 9). The Department specifically notes in this response that they were "…of the opinion that the limits forthese sources should be met by any fuel burning equipment and thus a stack limit is not warranted." (*id.*)

Considering the purpose of the rule and the background documents, it is clear that Wisconsin only intended the fuel burning emissions, and not any process related emissions, to be subject to the 5.5 lb SO_2/mmBTU emission limit. This is reflected throughout the background discussion of the rule and also in the fact that there is one set of limits for emissions from the fuel and a different set of limits for process related emissions in the current chapter NR 417, Wis. Adm. Code.

Impact of Analysis on USG Interiors Permit

For all of the reasons described above, Wisconsin believes the footnote currently found in condition I.B.3.a.(1) of the USG Interiors 265006830-P01 permit is appropriate. The Department agrees that sulfur dioxide emissions would also be generated from the melting of the raw materials (slag, brick chips, etc.) added to the cupola. In the draft renewal of the operation permit, the Department modeled the USG Interiors facility against the SO_2 NAAQS and the facility passed modeling.